OPERATION OF THE NORTHERN CALIFORNIA EARTHQUAKE MANAGEMENT CENTER (NCEMC): COLLABORATION BETWEEN UC BERKELEY AND THE USGS MENLO PARK, CA

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ABSTRACT

Together the USGS-MP and UCB provide earthquake monitoring and reporting in Northern California. We operate the ANSS Quake Monitoring System or AQMS software for earthquake reporting. The M6.0 South Napa earthquake "tested" all elements of our operations, including the finite fault estimation code. Most elements performed well; the event exposed quirks in our ShakeMap operation that delayed the appearance of new ground motion parameters and resulted in many unnecessary ShakeMap revisions being published. Both these problems have been alleviated; we are working on defining better parameters for ground motion collection and association. Event information from the NCEMC is stored in the databases at USGS-MP, UCB and the Northern California Earthquake Data Center (NCEDC), where continuous and event waveforms are also available. Highlights from the past fiscal year from our operating and improving earthquake monitoring in Northern California follow. Product Distribution Layer (PDL) is now used to transport all event information products, including origin and phase information, as well as fault plane solutions and moment tensor mechanisms. This allows these products to be entered directly into the Comprehensive Catalog and to be posted to the new earthquake information websites. The ANSS now requires that "event depth" be reported relative to the geoid, rather than to the surface of the velocity model used for location. We are working with the CISN partners to develop a method for calculating that depth, in addition to recalculating depths for past earthquakes. Changes to the database schema will be required. The four surface stations for the Moore Foundation funded Tremorscope project have been operating, and we have made progress on drilling the boreholes; borehole instrumentation will be installed this Spring. The operation of the AQMS software in the NCEMC improves reliability by allowing enhanced exchange and use of data for real time processing, and by providing complete and redundant processing systems at UCB and USGS-MP. We ARE transitioning AQMS software in both USGS-MP and at UCB to to the Linux package developed at UCB. We continue to work to improve old event waveform gathers by including data from the BK, PG, WR, BP and BG networks, when appropriate.The NCEDC now contains more than 70 TBytes of digital data from 1974 through 2014. Most of the data are seismic time series from Northern California networks. Continuous waveform data are available to users in near real-time via DHI servers and web-accessible files in the NCEDC DART (Data

Available in Real Time). In addition, waveforms and event products are available through web services. Metadata from NSMP stations are available online. The activities described in this report are funded under USGS Cooperative Agreement G10AC00093.